

## PART VII - HISTORIC RCRA CLOSURE UNITS

### VII.A. HISTORIC RCRA CLOSURE UNITS

The Permittee has closed seven of nine units previously identified for RCRA closure. These seven units have either been “clean closed” with no post-closure monitoring, or have post-closure monitoring requirements, as identified in Section V.B of this Permit. The Permittee shall effect a RCRA closure of the two remaining units identified for RCRA closure in Section V.B of this permit and §§ I.2.c and I.2.g of the RCRA permit application, subject to the conditions of this permit and the closure requirements of 40 CFR Part 265 Subpart G-Closure and Post-Closure. The Permittee shall submit to NDEP for approval, site characterization data on which to base a closure plan for those units which the Permittee intends to close. Upon concurrence by NDEP that adequate site characterization has been completed, NDEP will accept for review a closure plan addressing the requirements of 40 CFR Part 265 Subpart G. The Permittee shall incorporate the results of all site characterization efforts including but not limited to, characterization data approved by NDEP, into the closure plan to be presented for public comment. Development and implementation of the closure plans for the Historic RCRA Closure Units shall be discussed between NDEP and DOE in conjunction with the Federal Facility Agreement and Consent Order (FFACO).

#### VII.A.1 Clean Closure

The Permittee shall submit to NDEP for approval, a closure plan for those units which the Permittee intends to clean close, subject to the conditions of this permit.

#### VII.A.2 Closure in Place

The Permittee shall submit to NDEP for approval, a closure plan, subject to the conditions of 40 CFR § 265.111 through § 265.115, and post-closure care plan for those units which the Permittee intends to close in place, subject to the conditions of 40 CFR § 265.116 through § 265.120 and this permit.

VII.B. IDENTIFICATION OF HISTORIC RCRA CLOSURE UNITS

VII.B.1. Area 23 Hazardous Waste Trenches

VII.B.1.a. NDEP concurs that the Area 23 Hazardous Waste Trenches have been closed in accordance with an approved closure plan.

VII.B.1.b. Post-closure monitoring of the Area 23 Hazardous Waste Trenches will be conducted as follows:

- i. Soil moisture monitoring shall be conducted biannually and site inspections shall be conducted quarterly.
- ii. The Permittee shall obtain soil moisture data from the 30 neutron access tubes specified in Table 1, including the background control tube V-1. Tube V-1 is not subject to the notification requirements of paragraph VII.B.1.b.iv.
- iii. The soil moisture data will be collected and analyzed biannually (January and July). Annual reports of post-closure monitoring shall include monthly precipitation data for the reporting period and shall be submitted to NDEP by the last day of January each reporting year.

- iv. Data analysis will be based on the calculated Residual Volumetric Moisture content, obtained by subtracting the corresponding first year average (baseline) from the biannual soil moisture content value on a depth basis. Residual Volumetric Moisture Contents above five (5) percent (%) relative to baseline conditions observed and confirmed in two consecutive monitoring periods at a point directly beneath each respective hazardous waste trench 0.9 meters [three (3) ft.] from the bottom of each respective access tube access tube will require notification of the NDEP within seven (7) days of the confirmation. Events that occur as single point anomalies (at one depth) that are attributable to logging tool positioning errors will be excluded. Within thirty (30) days of the notification, a preliminary written assessment detailing recommendations to determine the nature, cause, and action will be submitted to NDEP for concurrence.
- v. After two years of post-closure monitoring, during which time the annual precipitation was average or above average, the Permittee may submit a request to the NDEP to reevaluate the monitoring/inspection schedule for further evaluations.

Table 1 -- Neutron access tubes monitored at the Area 23 Hazardous Waste Landfill RCRA Unit

Trench A	Trench B	Trench C	Trench S-1	Trench S-2
A-1	B-2	C-1	S1-2	S2-2
A-2	B-4	C-3	S1-5	S2-5

A-4	B-7	C-6	S1-8	S2-8
--	B-10	C-9	S1-11	S2-11
--	B-13	C-12	S1-14	S2-14
--	B-16	C-15	--	--
--	B-19	C-18	--	--
--	B-22	C-21	--	--

Background Control Tube V-1

VII.B.2. Area 23 Building 650 Leachfield

The NDEP has issued a "Clean Closure" and no further action letter for the Area 23 Building 650 Leachfield on November 3, 1998.

VII.B.3. Area 5 Retired Mixed Waste Pits and Trenches

The Permittee shall close the Area 5 Retired Mixed Waste Pits and Trenches subject to the conditions of 40 CFR § 265.310.

VII.B.4. Area 6 Steam Cleaning Effluent Ponds

The NDEP has issued a "Clean Closure" and no further action letter for the Steam Cleaning Effluent Ponds on February 20, 1998.

VII.B.5. Area 6 Decontamination Facility Evaporation Pond

- VII.B.5.a The NDEP concurs that the Area 6 Decontamination Facility Evaporation Pond has been closed in accordance with an approved closure plan.
- VII.B.5.b Post-Closure monitoring of the Area 6 Decontamination Facility Evaporation Pond RCRA cover is required and shall be conducted as follows:
- i. The inspections shall be conducted on a quarterly basis or if either of the following occurs:
    - A. Precipitation occurs in excess of 1.28 cm (0.50 in) in a 24 hour period. or
    - B. An earthquake occurs with a magnitude exceeding 4.5 on the Richter scale within 100 kilometers (62 miles).
  - ii. Inspections shall include an evaluation of the Decontamination Pond RCRA cover and identification of any deficiencies that may compromise the integrity of the cover. Inspections shall include the following elements:
    - A. Documenting the reason for the inspection (i.e., quarterly, excess precipitation, or earthquake) and any changes in the condition of the cover or fenced area. The changes may include, but are not limited to: trash/debris within the fenced area, erosion of or vegetation growing on the cover, and animal burrows/nesting activity.
    - B. Inspecting and documenting the condition of the RCRA cover perimeter fencing, wave barrier (fiber glass slats laced through the bottom of the chain link fence), warning signs, entrance gate, and lock.
    - C. Inspecting and documenting the condition of the five survey subsidence monuments.

- D. A detailed evaluation of the condition of the RCRA cover: Small cracks or settling imperfections (<5 cm [2 in] deep) on the cover shall be documented and scheduled for repair on an annual basis. Larger disruptions of the cover shall be immediately evaluated and remedied within sixty (60) days of discovery and shall be reported immediately to the NDEP.
- iii. All repair work shall preserve the original RCRA cover “as built” design. If the cover repair requires the modification of the RCRA cover design, the DOE/NV shall present a formal design modification request to the NDEP prior to making the design modification.
- iv. The Permittee shall survey all five subsidence monuments on an annual basis.
- v. Results of the annual post-closure monitoring activities shall be submitted to the NDEP by the Permittee by the last day of March each reporting year and shall include an executive summary, chronology of events, a copy of the inspection checklists, and recommendations and conclusions.

VII.B.6. Area 3 U-3fi Injection Well

- VII.B.6.a. NDEP concurs the Area 3 U-3fi Injection Well has been closed in accordance with an approved closure plan.
- VII.B.6.b. Post-Closure monitoring of the Area 3 U-3fi Injection Well will be conducted as follows:
  - i. Neutron logging of the ER-3-3 Borehole will be conducted quarterly.
  - ii. Neutron logging data will be collected based on the calendar year and analyzed

quarterly (January, April, July and October). Annual reports of Post-Closure Monitoring and Inspections shall include monthly precipitation data and be issued to the NDEP by the last day of February each reporting year.

- iii. The Permittee shall monitor for statistically significant changes in raw neutron counts exceeding an action level of 200 counts in the residual raw neutron count. Data analysis will be based on the calculated residual raw neutron counts, obtained by subtracting the first year average (baseline values) raw neutron count from the quarterly raw neutron count on a depth basis within the regulated interval of 73.1 meters (240 feet) to 82.3 meters (270 feet) below ground surface. Events that occur as single point anomalies (at one depth) that are attributable to logging tool placement errors will be excluded.
- iv. The Permittee shall take the following actions upon confirmation of exceeding the action level for two or more consecutive monitoring periods.
  - A. Notify the NDEP within seven (7) working days of confirmation.
  - B. Increase the monitoring from quarterly to monthly for at least one (1) normal monitoring period, (*i.e.* for at least three (3) months after having attained or exceeded the action level).
  - C. Evaluate the monitoring data to determine if a wetting front has been established based upon all monitoring data.
  - D. Within thirty (30) days of the completion of the third monthly monitoring, the Permittee will submit to NDEP an evaluation of the data and recommended course of action for concurrence.
- v. The Permittee shall conduct site inspections in conjunction with monitoring activities at least two times per year. The inspections will be conducted in

shall use the baseline benchmarks established by the initial survey and document any changes in the elevation or horizontal location of the cover for the injection well.

- vii. The Permittee shall evaluate the condition of monitoring well ER3-3 during each quarterly monitoring period to determine if settling within the U-3fi borehole has occurred on a scale great enough to cause shearing of the lower portion of the monitoring well. A downhole directional gyroscopic survey of the ER3-3 monitoring well will be conducted once every five (5) years and an evaluation will be made to determine whether settling of the U-3fi borehole has taken or will take place.

- A. If at any time, shearing or subsidence of the ER3-3 borehole becomes apparent, the NDEP shall be informed of the situation within seven (7) days of the confirmation. Within thirty (30) days of the notification, a preliminary written assessment stating the nature of the event and recommendations for further actions shall be submitted to the NDEP for concurrence.

- viii. After five years of post closure monitoring, the Permittee may submit a request to the NDEP to reevaluate the monitoring program and/or schedule.

VII.B.7. Area 3 U-3ax/bl Subsidence Crater

VII.B.7.a. NDEP concurs the Area 3 U-3axbl Subsidence Crater has been closed in accordance with an approved closure plan.

VII.B.7.b. Post-closure inspections will be done on a quarterly basis and will consist of visual observations to check that the cover is intact. Each site inspection will be documented on a site inspection form. Post-closure inspections will consist of the following elements:



- surveyed to determine if the cover has subsided.
- iii. During each inspection, any changes in the condition of the cover or fenced area will be documented. Specific changes noted on the current condition of the cover include, but are not limited to, trash/debris within the fenced compound, animal burrows/nesting activity, or erosion of the cover.
  - iv. All repair work should preserve the original cover “as built” design. If the cover repair requires modification of the cover design, NNSA/NSO will present a formal design modification request to the NDEP prior to making the design modification.
  - v. The U-3ax/bl Subsidence Crater cover is designed to limit infiltration into the disposal unit and is monitored using Time Domain Reflectometry (TDR) soil water content sensors buried at various depths within the waste cover to provide water content profile data. The soil water content profile data is used to demonstrate whether the cover is performing as expected. Cover monitoring at the U-3ax/bl Subsidence Crater shall be conducted as follows:
    - A. TDR probes are buried in the cover at depths of 0.3 to 2.4 m (1 to 8 ft), one probe every 0.3 m (1 ft).
    - B. TDR probes are installed at a distance of 36.5 m (120 ft) from the edge of the cover.
    - C. A profile of eight probes (a stack) was repeated at four locations across the cover.
    - D. Moisture content data from TDR moisture probes are recorded on a daily basis and stored on a data logger.
    - E. The data are downloaded remotely over a radio/telephone link on a

criteria will not be established until the cover has had sufficient time to reach equilibrium. Once the moisture content within the cover reaches equilibrium, soil moisture trigger values will be agreed upon with the NDEP.

- viii. The following compliance criteria have been established for the post-closure monitoring program:
  - A. Notify NDEP of noncompliance within 14 days of determining that the cover is not operating according to the established compliance criteria.
  - B. A listing of noncritical (cracks or settling imperfections equal to or less than 15 cm [6 in] deep on the cover) maintenance requirements will be compiled during the fiscal year and addressed in the following fiscal year.
  - C. Cracks or settling imperfections greater than 15 cm (6 in) deep that extend 1.0 m (3 ft) or more on the cover (through animal burrows, erosion, or subsidence) will be evaluated and repaired within 60 days of detection.
- ix. After NDEP notification of noncompliance, a work plan will be submitted to the NDEP within 90 days, outlining the proposed remediation/investigation plan.
- x. Results of the post-closure monitoring activities shall be submitted annually by NNSA/NSO to NDEP. An annual letter report will be provided on or before August 31 of each year of the post-closure inspection period. The duration of the post-closure inspection period is proposed to be five years. After five years of post-closure monitoring, NNSA/NV may submit a request to NDEP to reevaluate the monitoring program and/or schedule. The annual letter report will include the following information:

post-closure monitoring.

- xi. All closure and post-closure monitoring documentation will be retained in project files and is available upon request.

VII.B.8. Area 2 Bitcutter Shop and Postshot Containment Shop Injection Wells

VII.B.8.a. The NDEP concurs the Area 2 Bitcutter and Postshot Containment Shop injection Wells have been closed in accordance with an approved closure plan

VII.B.8.b. Post-closure monitoring of the Area 2 Bitcutter Shop and Postshot Containment Shop Injection wells shall be conducted as follows:

- i. The Permittee shall conduct a post-closure inspection two times per calendar year, beginning in December of 1996, to include completion of the Post-Closure Inspection Checklist, photographic documentation, and field note documentation.
- ii. Inspections shall include an evaluation on the condition of the unit and identification of any deficiencies that may compromise the integrity of the unit.
- iii. The NDEP shall be notified by DOE/NV of any deficiencies requiring a remedy other than general housekeeping issues. Deficiencies shall be remedied within sixty (60) days of discovery and be reported in the annual post-closure monitoring report to the NDEP.
- iv. Annual results of post-closure monitoring activities shall be submitted to the NDEP by the last day of September each reporting year and shall include an executive summary, chronology of events, copy of inspection checklists, and recommendations and conclusions.

VII.B.9. Area 2 U-2bu Subsidence Crater

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